

AMENDMENTS TO THE CLAIMS:

Please amend claims 1, 11 and 19 and add newly written claim 24 as follows.

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) Apparatus for indicating the departure of a shape of an object from a specified shape, the apparatus comprising:

radiation means for directing an incident beam of radiation onto the object,

inspecting means for inspecting ~~the~~ final beam after transmission by or reflection from said object, said object located optically between said radiation means and said inspecting means

at least one wavefront shaping means, is optically disposed between the radiation means and the inspecting means, wherein the apparatus is arranged so that the for shaping the final beam will to have a substantially planar wavefront when said object has said specified shape, and said final beam comprises a beam which has been both transmitted by or reflected from said object and shaped by said wavefront shaping means, said at least one wavefront shaping means is arranged to compensate for non-planarity introduced by said object having said specified shape, and said inspecting means is arranged to determine any departure of the wavefront of the final beam from planarity, wherein said inspecting means comprises:

beamsplitting means for splitting the final beam into two or more beams and for directing said two or more beams to laterally displaced locations; and

detector means for detecting radiation intensity of said two or more beams on the detector means.

2. (original) Apparatus according to claim 1 wherein said radiation means is arranged to produce a collimated beam of radiation.

3. (previously presented) Apparatus according to claim 1 wherein said incident beam of radiation is optical radiation.

4. (cancelled).

5. (previously presented) Apparatus according to claim 1 wherein at least one said wavefront shaping means is located between the radiation means and the object.

6. (previously presented) Apparatus according to claim 1 wherein at least one said wavefront shaping means is located between the object and the inspecting means.

7. (previously presented) Apparatus according to claim 1 wherein at least one said wavefront shaping means comprises a lens or curved reflector.

8. (previously presented) Apparatus according to claim 1 wherein at least one said wavefront shaping means comprises a diffraction grating or hologram.

9. (previously presented) Apparatus according to claim 1 wherein at least one said wavefront shaping means is provided by a spatial light modulator.

10. (previously presented) Apparatus according to claim 1 including means for adjusting the relative position of the object and a said wavefront shaping means.

11. (currently amended) Apparatus according to claim 1 comprising a beam splitter between said ~~source~~irradiation means and said inspecting means.

12. (previously presented) Apparatus according to claim 1 wherein the beamsplitting means of said inspecting means comprises at least one of a diffraction grating and hologram.

13. (previously presented) Apparatus according to claim 1 wherein the beamsplitting means of said inspecting means comprises non-diffractive beamsplitter means for receiving light from two spaced object planes along a common path for transmission to first and second image areas along respective first and second optical paths, and focussing means arranged to bring said first and second object planes into focus in said first and second areas.

14. (previously presented) Apparatus according to claim 1 wherein the inspecting means is arranged to provide an analysis of the shape, or components of the shape, of the wavefront of the final beam.

15. (previously presented) Apparatus according to claim 1 wherein the detector means of the inspecting means comprises a pixelated imaging photosensor.

16. (original) Apparatus according to claim 15 wherein the pixelated imaging photosensor is a charge coupled device (CCD) array.

17. (cancelled).

18. (cancelled).

19. (currently amended) A method of indicating the departure of a shape of an object from a specified shape, the method including the steps of:

directing an incident beam of radiation onto the object;

shaping at least one of said incident beam and a beam transmitted by or reflected from said object so that that a final beam following transmission by or reflection from said object would have a planar wavefront if the object has said specified shape, said incident beam passing through at least one wavefront shaping means disposed between a source of said radiation beam and an inspecting means a final beam comprising a beam which has been both transmitted by or reflected from said object and shaped by said shaping step; and

inspecting the final beam ~~in said inspecting means~~ for any departure of its wavefront from planarity, wherein the step of inspecting said final beam comprises the steps of:

splitting the final beam into two or more beams; and

directing said two or more beams to laterally displaced locations on a detector.

20. (original) A method according to claim 19 wherein said object is an optical component.

21. (original) A method according to claim 20 wherein said optical component is a window or is of generally laminar form, or comprises a planar reflective surface.

22. (cancelled).

23. (cancelled).

24. (new) Apparatus for indicating the departure of a shape of an object from a specified shape, the apparatus comprising:

a radiation source for directing an incident beam of radiation onto the object;

a beam inspecting device for inspecting a final beam, wherein said final beam comprises a beam which has been both transmitted by or reflected from said object and shaped by at least one wavefront shaping device, said object located optically between said radiation source and said inspecting device;

said at least one wavefront shaping device, optically disposed between the radiation source and the inspecting device, for shaping the final beam to have a substantially planar wavefront when said object has said specified shape, said at least one wavefront shaping device is arranged to compensate for non-planarity introduced by said object having said specified shape, and said inspecting device is arranged to determine any departure of the wavefront of the final beam from planarity, wherein said inspecting device comprises:

a diffraction device for splitting the final beam into two or more beams and for directing said two or more beams to laterally displaced locations; and

a photosensor for detecting radiation intensity of said two or more beams at said laterally displaced locations.